

1 The following are all the claims as they stand after this response. Please amend claims 1
2 and 23.

A /
Sub B /

3 1. [amended] A method for classifying a data packet, the
4 method comprising:
5 receiving the data packet at a root node of a
6 classification tree;
7 successively passing the data packet to each child of a
8 first tree level until a first child of the first tree level
9 of the classification tree indicates a satisfaction of a
10 node-criteria packet matching function of said first child,
11 and the first child forming said data packet into a matched
12 packet; and
13 repeating the steps of passing and forming for a next
14 tree level until no first child of said next level at a
15 succeeding next level indicates satisfaction of the
16 node-criteria packet matching function of said first child
17 of said next level.

18 2. A method as recited in claim 1, wherein the step of
19 passing includes executing a set of code which returns a
20 status indication.

21 3. A method as recited in claim 1, wherein the step of
22 forming includes the first child specifying a set of code to
23 be run subsequently.

1 4. A method as recited in claim 3, wherein the step of
2 specifying includes specifying the set of code to be run
3 following satisfaction.

4 5. A method as recited in claim 1, further comprising ally
5 adding at least one node in at least one level of the
6 classification tree.

7 6. A method as recited in claim 5, wherein said at least
8 one new child node is a Real Audio node.

9 7. A method for classifying a packet, said method
10 comprising suspending a packet classification process in
11 progress for said packet; and obtaining external information
12 employed in said classifying.

13 8. A method in claim 7, wherein the step of obtaining
14 includes augmenting a node-criteria of a node in a
15 classification tree with external information.

16 9. A method as in claim 8, wherein the external
17 information includes identification of the originator of
18 said packet.

19 10. A method as in claim 8, wherein the external
20 information includes authentication of an originator of said
21 packet.

22 11. A method as recited in claim 7, wherein the
23 classification process is an extendible classifier process.

1 12. A method as recited in claim 1, further comprising the
2 step of parsing said matched packet and generating relevant
3 information.

4 13. A method as recited in claim 1, further comprising the
5 step of transforming said matched packet into a transformed
6 packet.

7 14. A method as recited in claim 1, further comprising
8 associating the packet with a last first child indicating
9 satisfaction.

10 15. A method as recited in claim 14, further comprising
11 executing a set of code in accordance with said last first
12 child.

13 16. A method as recited in claim 1, further comprising
14 determining a disposition of the data packet.

15 17. A method for determining disposition of a packet
16 received at a child node, said method comprising:

17 passing said packet and a first disposition of said packet
18 to an external process; and

19 said external process augmenting the packet disposition by
20 employing a process specific means; and returning the
21 augmented packet and an augmented disposition to the child
22 node.

23 18. A method as recited in claim 17, further comprising
24 suspending a disposition process in progress for said
25 packet.

1 19. A method as in claim 18, wherein the augmented
2 disposition includes identification of an originator of said
3 packet.

4 20. A method as in claim 18 wherein the augmented
5 disposition includes authentication of an originator of said
6 packet.

7 21. A method as recited in claim 18, wherein the
8 disposition is employed for policy enforcement.

9 22. A method as recited in claim 16, further comprising
10 employing the classification process as a firewall.

11 23. [amended] A method as recited in claim 1, further
12 comprising employing the classification process for dynamic
13 application level classification.

14 24. A method as recited in claim 23, further comprising
15 employing the classification process for policy enforcement.

16 25. A method as recited in claim 23, further comprising
17 employing the classification process for rate limiting.

18 26. A method as recited in claim 23, further comprising
19 employing the classification process for load balancing.

20 27. A method as recited in claim 1, further comprising
21 employing the classification process to shape traffic .

22 28. An apparatus to classify a data packet, the apparatus
23 comprising:

1 a network interface device to receive the data packet
2 from the physical network and pass the data packet to the
3 root node of a classification tree, and the reverse, to
4 receive the data packet from the root node and send the data
5 packet to the physical network;

6 a packet module to successively pass the packet from
7 child node to child node at a next tree level until a first
8 child node of the next tree level of the classification tree
9 which indicates a satisfaction of a node-criteria of the
10 first child node, and to form the data packet into a matched
11 packet until no first child node of at a succeeding next
12 level indicates satisfaction of the first node-criteria of
13 the first child node of the succeeding next level.

14 29. An apparatus as recited in claim 28, wherein a portion
15 of the apparatus is implemented as an accelerator chip.

16 30. An apparatus as recited in claim 28, wherein the
17 apparatus is employed for application level classification.

18 31. An apparatus as recited in claim 28, wherein the
19 apparatus
20 is employed as a firewall.

21 32. An apparatus as recited in claim 28, wherein the
22 apparatus is employed as a border server.

23 33. A method as recited in claim 2, wherein the status
24 indication is of the pm_t type.

25 34. An article of manufacture comprising a computer usable
26 medium having computer readable program code means embodied

1 therein for causing classification of a data packet, the
2 computer readable program code means in said article of
3 manufacture comprising computer readable program code means
4 for causing a computer to effect the steps of claim 1.

5 35. An article of manufacture as recited in claim 34, the
6 computer readable program code means in said article of
7 manufacture further comprising computer readable program
8 code means for causing a computer to effect ally adding at
9 least one node in at least one level of the classification
10 tree.

11 36. An article of manufacture comprising a computer usable
12 medium having computer readable program code means embodied
13 therein for causing classification of a data packet, the
14 computer readable program code means in said article of
15 manufacture comprising computer readable program code means
16 for causing a computer to effect the steps of claim 8.

17 37. A computer program product comprising a computer usable
18 medium having computer readable program code means embodied
19 therein for causing a determination of a disposition of a
20 packet, the computer readable program code means in said
21 computer program product comprising computer readable
22 program code means for causing a computer to effect the
23 steps of claim 18.

24 38. An apparatus for classifying a data packet, the
25 apparatus comprising:

26 means for receiving the data packet at a root node of a
27 classification tree;

1 means for successively passing the data packet to each
2 child of a first tree level until a first child node of the
3 first tree level of the classification tree indicates a
4 satisfaction of a node-criteria of said first child node,
5 and the first child node forming said data packet into a
6 matched packet; and

7 means for repeating the steps of passing and forming for
8 a next tree level until no first child node of said next
9 tree level at a succeeding next level indicates satisfaction
10 of the node-criteria of said first child node of said
11 succeeding next level.

12 39. An apparatus for determining disposition of a packet
13 received at a child node, said apparatus comprising:

14 an interrupt context of a control program, said child node
15 existing within the interrupt context;

16 an external process outside of the interrupt context of the
17 control program;

18 means for passing said packet and a first disposition of
19 said packet to the external process, said external process
20 to augment the packet disposition by employing a process
21 specific means and to return an augmented packet with an
22 augmented disposition to the child node; and

23 said interrupt context including means for receiving said
24 augmented packet and said augmented disposition from said
25 external process.